

## CLAIMS

1. A polyethylene filament having a tensile strength of 15 cN/dtex or more and a tensile modulus of 500 cN/dtex or more, wherein an index value of a Circular knit comprising the filament is 3.0 or more as determined by using a coup tester.

2. A polyethylene filament according to claim 1, comprising a polyethylene having a weight-average molecular weight of 300,000 or less and a ratio of a weight-average molecular weight to a number-average molecular weight ( $M_w/M_n$ ) of 4.0 or less as determined in the state of a filament.

3. A polyethylene filament fabric excellent in incision resistance, comprising the polyethylene filament according to claim 1.

4. A incision-resistant glove, comprising the polyethylene filament according to claim 1.

5. A incision-resistant vest, comprising the polyethylene filament according to claim 1.

6. A fibrous material for reinforcing cement mortar or concrete, comprising as a primary component a polyethylene filament with a tensile strength of 15 cN/dtex or more and a tensile modulus of 500 cN/dtex or more which comprises a polyethylene having a weight-average molecular weight of 300,000 or less and a ratio of a weight-average

molecular weight to a number-average molecular weight (Mw/Mn) of 4.0 or less as determined in the state of a filament.

7. A fibrous material for reinforcing cement mortar  
5 or concrete according to claim 6, wherein a monofilament fineness of a high strength polyethylene filament is 1.5 dtex or less.

8. A fibrous material for reinforcing cement mortar  
or concrete according to claim 6, wherein said filament is  
10 a chopped filament.

9. A fibrous material for reinforcing cement mortar  
or concrete according to claim 6, wherein said filament is  
in the form of a chip which converges two or more high  
strength polyethylene filaments cut into suitable length.

15 10. A concrete composition comprising a chip  
according to claim 9.

11. A rope comprising a polyethylene filament with a  
tensile strength of 15 cN/dtex or more and a tensile  
modulus of 500 cN/dtex or more which comprises a  
20 polyethylene having a weight-average molecular weight of  
300,000 or less and a ratio of a weight-average molecular  
weight to a number-average molecular weight (Mw/Mn) of 4.0  
or less as determined in the state of a filament.

12. A rope according to claim 11 comprising a  
25 polyethylene containing from 0.01 to 3.0 branch chains per

1,000 backbone carbon atoms.

13. A process for producing a high strength polyolefin filament, wherein a non-drawn polyolefin filament which comprises a polyethylene having a weight-  
5 average molecular weight of 60,000-600,000, a ratio of a weight-average molecular weight to a number-average molecular weight ( $M_w/M_n$ ) of 4.5 or less, and a rate of birefringence ( $\Delta n$ ) of 0.008 or more is drawn at a temperature not higher than the  $\alpha$ -relaxation temperature of  
10 said non-drawn filament.

14. A process for producing a high strength polyolefin filament according to claim 13, wherein the total draw ratio from spinning to drawing is 1500 times or more.

15 15. A process for producing a high strength polyolefin filament according to claim 13, wherein said polyolefin is a polyethylene composed essentially of ethylene.

20 16. A process for producing a high strength polyolefin filament according to claim 13, wherein one or more step of drawing is further conducted after drawing at a temperature not higher than the  $\alpha$ -relaxation temperature of said non-drawn filament.

25 17. A high strength polyolefin filament obtained by the process according to claim 13, having an average a

tensile strength of 15 cN/dtex or more and an average tensile modulus of 500 cN/dtex.